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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/591,374
Filing Date: August 31, 2006
Appellant(s): DAVIS, MARK FRANKLIN

David B. Walker
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 5/9/2011 appealing from the Office action mailed 8/23/2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 63-74 are rejected under 35 USC 101.

Claims 63-37, 70-71, and 74 are rejected under 35 USC 102a.

Claims 68-69, and 72-73 are rejected under 35 USC 103a.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

Claims 63-67, 70-71, and 74 are rejection under 35 USC 102(a).

Claims 68-69, and 73 under 35 USC 103(a).

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner. The 35 USC 101 rejections of claims 63-74 are withdrawn for consideration by the board.

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

20030236583	Baumgarte et al.	12-2003
5394472	Broadie.	2-1995

Faller et al. "Binaural Cue Coding - Part II: Schemes and Applications" Nov. 2003.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

1. Claims 63-67, 70-71, and 74 are rejected under 35 U.S.C. 102(a) as being anticipated by Faller et al. (NPL document "Binaural Cue Coding—Part II: Schemes and Applications)

As per claim 63, Faller discloses the method comprising: a) receiving said M encoded audio channels and said set of spatial parameters (Faller, Page 520, Fig. 1 there are M encoded audio channels through the BCC encoder and a set of spatial parameters through the side information.),

b) deriving N audio signals from said M encoded channels, wherein each audio signal is divided into a plurality of frequency bands, wherein each band comprises one or more spectral components (Faller, Fig. 1 shows that there are plural output channels. Also see Page 520, column 2, …*The major difference between these techniques and BCC is, that BCC operates in subbands and is able to spatialize a number of source signals given only the respective sum signal (with the aid of side information)*… which teaches frequency band information.), and

c) generating a multichannel output signal from the N audio signals and the spatial parameters (Faller, Fig. 1 shows that there are plural output channels.), whereby

M is two or more (Faller, Fig. 1 shows a plurality of encoded audio channels in sum/side information.),

at least one of said N audio signals is a correlated signal derived from a weighted combination of at least two of said M encoded audio channels (Faller, Page 525, column 2, …*For obtaining a measure for the degree of correlation, the coherence estimates are averaged in each partition. For the averaging it is meaningful to apply a weighting function to the coherence before averaging. The weighting can be made proportional to the product of power estimates… which eliminates the denominator in (19). Since we are interested in the average degree of correlation in each partition, we average the weighted magnitude coherence in each partition and normalize it by the sum of power estimate products*…),

said set of spatial parameters includes a first parameter indicative of the amount of an uncorrelated signal to mix with a correlated signal (Faller, Page 526, column 1, …*The estimated inter-channel cues (BCC side information) are directly used to generate the output multichannel audio signal by applying BCC synthesis*… The side information (spatial parameters) are provided to give the correct cross-correlation cues to the mono signal to provide spatial perception for audio synthesis.) and

step c) includes deriving at least one uncorrelated signal from said at least one correlated signal, and controlling the proportion of said at least one correlated signal to

said at least one uncorrelated signal in at least one channel of said multichannel output signal in response to one or ones of said spatial parameters, wherein said controlling is at least partly in accordance with said first parameter (Faller, Page 530, column 1, …*BCC generally provides a good quality of the spatial image using only ICLDs and ICTDs as was done in the subjective test. For recordings with a high amount of uncorrelated reverberation in the audio channels, such as classical recordings, it is desirable to also use ICC cues in order to restore the diffuseness of the reverberation. Informal listening revealed that the ICC synthesis does not only restore some of the diffuse reverberation, but also seems to improve the stability of the spatial image in many cases*…).

As per claim 64, claim 63 is incorporated and Faller teaches:

wherein step c) includes deriving said at least one uncorrelated signal by applying an artificial reverberation filter to said at least one correlated signal (Faller, Page 525, column 1, the head related transfer functions (artificial reverberation filters) are be used to synthesize binaural signals including uncorrelated signals (Page 530, column 1).).

As per claim 65, claim 63 is incorporated and Faller teaches:

wherein step c) includes deriving said at least one uncorrelated signal by applying a plurality of artificial reverberation filters to said at least one correlated signal (Faller, Page 525, column 1, the head related transfer functions (artificial reverberation

filters) are be used to synthesize binaural signals including uncorrelated signals (Page 530, column 1). There are a plurality of HRTF, see Fig. 8.).

As per claim 66, claim 65 is incorporated and Faller teaches:

wherein each of said plurality of artificial reverberation filters has a unique filter characteristic (Faller, Page 525, Fig. 8, …*As a function of the source index I_b portions of different HRTF's are applied in different partitions*…).

As per claim 67, claim 63 is incorporated and Faller teaches:

wherein said controlling in step c) includes deriving a separate proportion of said at least one correlated signal to said at least one uncorrelated signal for each of said plurality of frequency bands, at least partly in accordance with said first parameter (Faller, Page 525, Fig. 8, …*As a function of the source index I_b portions of different HRTF's are applied in different partitions*…).

As per claim 70, claim 63 is incorporated and Faller teaches:

further comprising shifting the magnitudes of spectral components in at least one of said N audio signals in response to one or ones of said spatial parameters (Faller, Page 523, column 2, see explanation of equation 9.).

As per claim 71, claim 63 is incorporated and Faller teaches:

wherein said multichannel output signal is in the time domain (Faller, Page 523, column 1, …*These spectra are converted back to the time-domain resulting in the multichannel output. An FFT is used as time-frequency transform (TF)*…).

As per claim 74, claims 63 is incorporated and Faller teaches:

An apparatus comprising means adapted to carry out each of the steps of any one of the methods of claims 63 – 73 (Faller, Page 527, Fig. 10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 68-69, and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faller et al. (NPL document "Binaural Cue Coding—Part II: Schemes and Applications) in view of Baumgarte et al. (PGPUB #20030236583) in view of Broadie. (US Patent #5394472)

As per claim 68, claim 63 is incorporated and Faller teaches, but Baumgarte supplements:

wherein said N audio signals are derived from said M encoded audio channels (Baumgarte, Fig. 1(120), ¶ 0027, shows that the stereo decoding produces L and R channels and side information further provides high frequency information.).

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Baumgarte with Faller to be able to use conventional coding techniques and also provide BCC enhancement based on stereo components. (Baumgarte, abstract)

Faller and Baumgarte fail to specifically teach, but Broadie teaches:

wherein said N audio signals are derived from said M encoded audio channels by a process that includes dematrixing said M encoded audio channels (Broadie, Fig. 1, column 4, lines 33-37 teach dematrixing.).

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Broadie with Faller and Baumgarte because all are related to spatial audio representations and Broadie's dematrixing could have replaced the standard decoding algorithm of Faller and Baumgarte prior to BCC synthesis to provide the predictable result of a stereo signal.

As per claim 69, claim 68 is incorporated and Faller and Baumgarte fail to specifically teach, but Broadie supplements:

wherein the dematrixing operates at least partly in response to one or ones of said spatial parameters (Broadie, column 2, lines 35-44, Broadie uses spatial parameters to produce spatial information in a matrix at the receiver.).

Broadie, Faller, and Baumgarte are analogous art because all are related to spatial audio representations. Broadie further provides spatial information in a matrix process. At the time of the invention, there was a recognized problem of efficiency in producing spatial audio at a receiver (Broadie, column 2, lines 35-44). It would have been obvious to someone of ordinary skill in the art at the time of the invention to try the combination of Broadie with Faller and Baumgarte to improve efficiency of providing spatial audio at the receiver through a matrix.)

As per claim 73, claim 63 is incorporated and Faller and Baumgarte fail to specifically teach, but Broadie teaches:

wherein N is 3 or more (Fig. 2 shows a left, right, and a mono signal provided to the decoder.).

It would have been obvious to someone of ordinary skill in the art at the time of the invention to combine Broadie with Faller and Baumgarte because all are related to spatial audio representations and Broadie's dematrixing could have replaced the standard decoding algorithm of Faller and Baumgarte prior to BCC synthesis to provide the predictable result of a stereo signal.

3. Claim 72 is rejected under 35 U.S.C. 103(a) as being unpatentable over Faller et al. (NPL document "Binaural Cue Coding—Part II: Schemes and Applications) in view of Official Notice (see MPEP 2144.03).

As per claim 72, claim 63 is incorporated and Faller fails to specifically teach, however it would have been obvious to someone of ordinary skill in the art:

wherein said multichannel output signal is in the frequency domain (Faller teaches on Page 523, column 1, …*These spectra are converted back to the time-domain resulting in the multichannel output. An FFT is used as time-frequency transform (TF)*… Therefore, the output was in the frequency domain prior to the FFT. It would have been obvious to someone of ordinary skill in the art at the time of the invention that the FFT could have been eliminated to transmit the signal in the frequency domain to reduce processing.).

(10) Response to Argument

1. The Examiner notes that the arguments directed to the rejections of method claims 63-73 under 35 USC 101 are now moot in view of the withdrawal of the rejections.

2. Applicant argues "This rejection also should be reversed because the Examiner has not properly construed the means-plus-function limitations of claim 74, and has provided no explanation as to how claim 74 is directed to non-statutory subject matter; no analysis of the means- plus-function limitations has been provided. As has already

been explained, Claim 74 is directed to "[a]n apparatus comprising means adapted to carry out each of the steps of any one of the methods of claims 63-73," and therefore includes exclusively means-plus- function limitations under 35 U.S.C. § 112, paragraph six…" (Remarks, Pages 27-28). The Examiner first notes MPEP 2181 where the express use of "means for" or "step for" was not used ("However, if a claim limitation does not use the phrase "means for" or "step for," that is, the first prong of the 3-prong analysis is not met, the examiner will not treat such a claim limitation under 35 U.S.C. 112, sixth paragraph. It will not be necessary to state in the Office action that 35 U.S.C. 112, sixth paragraph, has not been invoked, since the presumption is that applicant did not intend to invoke the provisions of 35 U.S.C. 112, sixth paragraph, because applicant did not use the specific phrase "means for" or "step for.", MPEP 2181, Section I, ¶ 12) Therefore, the Examiner did not interpret the claim under 112 6th paragraph prior to the explicit invocation by Applicant. The 35 USC 101 rejection has been withdrawn in view of the Applicant's invocation of 112 6th paragraph.

3. Applicant further argues "Contrary to the Examiner's characterization, the passage quoted relates to measuring the correlation between input signals to determine one of the spatial parameters, the IC (interaural correlation) or ICC (inter-channel correlation) parameter. Determining this spatial parameter has nothing to do with generating a correlated signal which is derived from a weighted combination of at least two of the M encoded audio channels. Neither the cited passage nor any other portion of Faller teaches or suggests that at least one of said N audio signals is a correlated signal derived from a weighted combination of at least two of said M encoded audio

channels as required by each of the currently pending claims." (Remarks, Page 30, ¶ 1) The Examiner disagrees. The inter-channel correlation is the (uncorrelated) parameter (from the side information, see Faller, Fig. 1) that decorrelates the sum signal (the correlated signal, see Faller, Fig. 1) at the BCC decoder to produce diffuseness in the decoded audio signal (Faller, Page 530, column 1).

4. Applicant further argues "The Examiner also concluded that "[t]he side information (spatial parameters) are provided to give the correct cross-correlation cues to the mono signal to provide spatial perception for audio synthesis."~4 Id. However, contrary to the Examiner's conclusions, Faller makes no mention of mixing correlated and uncorrelated signals much less a parameter indicative of the amount of an uncorrelated signal to mix with a correlated signal. Faller therefore does not teach or suggest that said set of spatial parameters includes a first parameter indicative of the amount of an uncorrelated signal to mix with a correlated signal as required by each of the currently pending claims." (Remarks, Pages 30-31) The Examiner disagrees. Faller acknowledges that the BCC synthesis uses the BCC side information to generate the output multichannel audio signal by providing BCC synthesis. The BCC side information has been defined to include the parameters as shown in Faller, Page 231, section II. The Examiner further directs applicant to Page 526, section IV, B. BCC for Natural Rendering which teaches how the side information is coded to include the ICLD, ICTD, and ICC parameters. As is described above and Faller, Page 521, the ICC parameters keep track of the correlation between the channels (inter-channel correlation) and is used for determining the width (or diffuseness) of a rendered source (Faller, Page 522,

column 1). Therefore, the ICC parameters (through time) is part of a side signal that is uncorrelated with the sum signal (the correlated signal). For the purposes of BCC synthesis, the estimated inter-channel cues (BCC side parameters including the ICC parameter restoring diffuseness) are directly used to generate the output multichannel audio signal by applying BCC synthesis (Faller, Page 526, column 1, bullet 2).

5. Applicant further argues "However, contrary to the Examiner's characterization, the cited portion discusses merely that some recordings have a high amount of uncorrelated reverberation and that the ICC parameter can be used to restore diffuse reverb. See Faller, p. 530, col. 1. Moreover, as shown in Figure 5 and described in Section II.B of Faller, a weighting factor is applied to each subband of the mono input signal to generate each output signal. The weighting factors are determined from the spatial parameters (ICLD, ICTD, and ICC). No uncorrelated signal is ever derived, and the output is not a combination of correlated and uncorrelated signals controlled in response to the spatial parameter. Neither the cited portions nor any other portion of Faller teaches or suggests (a) deriving an uncorrelated signal from the correlated signal; or (b) controlling the proportion of said at least one correlated signal to said at least one uncorrelated signal in at least one channel of said multichannel output signal in response to one or ones of said spatial parameters. The absence of either of these limitations is fatal to the Examiner's rejections - and Faller teaches or suggests neither of the two limitations." (Remarks, Page 31, ¶ 2) The Examiner disagrees. As is described above in section 4, there is a) a derivation of an uncorrelated signal in the side parameters generated at the BCC analysis at the encoder, and b) the ICC

parameter is used (at the decoder) to determine the inter-channel correlation to be mixed between the side information (uncorrelated signal) and the sum signal (correlated signal) to restore the diffuseness (deriving at least one uncorrelated signal) of the sound between the multichannel output. Note the difference between the spatial parameters have a parameter indicative of the amount of an uncorrelated signal and the derivation of at least one uncorrelated signal. The spatial parameters are uncorrelated as compared to the sum (correlated) signal but the derivation of at least one uncorrelated signal is directed to the output that is spatially diffuse.

6. The remainder of the arguments on pages 32-33 arguing against the applied Faller reference under a 102a rejection are also not considered to be persuasive as enumerated in the above responses.

7. Applicant further argues “With respect to claim 64, the Examiner further erroneously found that "step c) includes deriving said at least one uncorrelated signal by applying an artificial reverberation filter to said at least one correlated signal." Final Office Action at 6. The Examiner alleged that support for this conclusion is found in Faller as follows "(Page 525, column 1, the head related transfer functions (artificial reverberation filters) are be [sic] used to synthesize binaural signals including uncorrelated signals (Page 530, column 1).)" Id. However, Faller makes no mention of artificial reverberation filters, and the Examiner provides no explanation for why the head-related transfer functions meet this claim limitation nor how they are allegedly used to synthesize binaural signals including uncorrelated signals. In fact, as discussed in Section III above, Faller does not disclose, explicitly or inherently, deriving an least

one uncorrelated signal from said at least one correlated signal. Faller therefore necessarily also does not teach deriving that same uncorrelated signal by applying an artificial reverberation filter to said at least one correlated signal. For at least these additional reasons, the rejection of claim 64 under 35 U.S.C. § 102 as allegedly anticipated by Faller should be reversed." (Remarks, Page 34, ¶ 3) The Examiner disagrees. Head related transfer functions are used as an alternative to synthesizing ICLD's and ICTD's where a local table in the BCC synthesizer stores an HRTF frequency response for obtaining the binaural signals (Faller, Page 525, column 1). The inter-channel time difference (ICTD) parameters are used to denote the delay between the channels which causes reverberation (reverberation is caused by the receipt of two similar signals where one has a delay) when reapplied at the BCC synthesis. However, the head-related transfer functions are additionally used to synthesize binaural signals instead of the ICTD parameter but having a similar effect. Therefore, the HRTF's cause a reverberation effect by alternatively synthesizing the binaural signals (as opposed to the direct ICLD and ICTD synthesis). The Examiner considers the HRTF filter having a reverberation effect to be a reasonable interpretation of an artificial reverberation filter. Lastly, the HRTF is applied to the spectral coefficients of the (correlated) sum signal to synthesize the decorrelated (uncorrelated signal) output having spatial information reinserted.

8. Applicant further argues "Claim 65 differs from claim 64 in that it specifies applying "a plurality of artificial reverberation filters" as opposed to "an artificial reverberation filter." For the same reasons as stated above with respect to claim 64,

Failer does not disclose, explicitly or inherently, the additional claim limitation of claim 64. For at least those additional reasons, the rejection of claim 65 under 35 U.S.C. § 102 as allegedly anticipated by Failer should be reversed." (Remarks, Page 35, ¶ 1) The Examiner disagrees for the same reasons as described above for claim 64.

9. Applicant further argues "Claim 66 depends from claim 65 and therefore includes each of the limitations of claim 65 that are shown in Sections III and Sections IV.B above not be taught, explicitly or inherently, by Faller. For those reasons alone, Claim 66 is not anticipated by Faller. In addition, claim 66 adds the additional claim limitation that "each of said plurality of artificial reverberation filters has a unique filter characteristic. The Examiner erroneously asserts that Faller teaches this limitation at "(Page 525, Fig. 8, ... As a function of the source index Ib portions of different HRTF's are applied in different partitions...)." Final Office Action at 7. The Examiner provides no explanation as to how applying different HRTFs in different partitions explicitly or inherent teaches that each of the plurality of HRTFs has a unique filter characteristic. Moreover, as discussed with respect to claim 64, the Examiner has failed to explain how the HRTFs of Faller act as artificial reverberation filters as claimed. For at least these additional reasons, the rejection of claim 66 under 35 U.S.C. § 102 as allegedly anticipated by Faller should be reversed." (Remarks, Page 35, ¶ 2) The Examiner disagrees. Page 525, column 1 teaches that there are left and right head-related transfer functions (a plurality). Further, the same section describes that there are left and right frequency responses (unique filter characteristics to the left and right filters.)

10. Applicant further argues “In addition, claim 67 adds the additional claim limitation "wherein said controlling in step c) includes deriving a separate proportion of said at least one correlated signal to said at least one uncorrelated signal for each of a said plurality of frequency bands, at least partly in accordance with said first parameter." The Examiner erroneously asserts that Failer teaches this additional limitation at "(Page 525, Fig. 8,... As a function of the source index Ib portions of different HRTF's are applied in different partitions...)." Final Office Action at 7. The Examiner provides no explanation as to how applying different HRTFs in different partitions, explicitly or inherently teaches deriving a separate proportion of said at least one correlated signal to said at least one uncorrelated signal for each of a said plurality of frequency bands, at least partly in accordance with said first parameter as claimed.” (Remarks, Page 36, ¶ 1) The Examiner disagrees. Faller, Page 524, column 2, section A, teaches that the inter-channel cues are synthesized from the source indices in each partition at each time. The inter-channel cues being ICC, ICLD, ICTD parameters. At section 2, the decoder processing has, for each partition, the inter-channel cues obtained from a local table which stores one set of inter-channel cues for each source. For each partition the cues are chosen according to the source index and synthesized using BCC synthesis. The cited section of Faller in the Office action refers to the HRTF filters deriving a separate portion of at least one correlated signal to said at least on uncorrelated signal (alternatively synthesizes the ICLD and ICTD parameters for each partition, note the partitions are in frequency, see Fig. 7) for the flexible rendering, which includes the ICC parameters. The ICC parameters are still used to restore diffusion in combination with

the other parameters, so the ICC synthesis (first parameter) is at least partly in accordance with the HRTF alternative synthesis of the ICLD and ICTD parameters for each partition to ultimately provide multichannel diffuse audio.

11. Applicant further argues "In fact, as discussed more fully in Section III above, Failer makes no mention of controlling the proportion of said at least one correlated signal to said at least one uncorrelated signal in at least one channel of said multichannel output signal in response to one or ones of said spatial parameters, wherein said controlling is at least partly in accordance with said first parameter as required by claim 63. Necessarily, Faller also does not teach, explicitly or inherently, deriving a separate proportion of the correlated signal to the uncorrelated signal as further required by claim 67. For at least these additional reasons, the rejection of claim 66 under 35 U.S.C. § 102 as allegedly anticipated by Failer should be reversed." (Remarks, Page 36, ¶ 2) The Examiner disagrees. Refer to above response 10, The cited section of Faller in the Office action refers to the HRTF filters deriving a separate portion of at least one correlated signal to said at least on uncorrelated signal (alternatively synthesizes the ICLD and ICTD parameters for each partition, note the partitions are in frequency, see Fig. 7) for the flexible rendering, which includes the ICC parameters. The ICC parameters are still used to restore diffusion in combination with the other parameters, so the ICC synthesis (first parameter) is at least partly in accordance with the HRTF alternative synthesis of the ICLD and ICTD parameters for each partition to ultimately provide multichannel diffuse audio.

12. Applicant's arguments on Page 37 fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

13. Applicant further argues "However, the Examiner states only what could happen if Broadie was combined with the combination of Faller and Baumgarte, but provides no rational underpinning as to how one of ordinary skill in the art would have made the necessary combination. The Examiner also fails to explain why one of ordinary skill in the art would have been motivated to add the alleged dematrixing of Broadie other than "to provide the predictable result of a stereo signal." But the Examiner cites Baumgarte, figure 1 (120), ¶0027, as teaching stereo decoding that produces L and R channels and side information that further provides high frequency information. Final Office Action at 9. If the combination of Faller and Baumgarte already teaches a stereo signal, as alleged by the Examiner, the fact that adding the alleged dematrixing of Broadie leads to a predictable result of a stereo signal provides no rational underpinning to add the third reference to the first two. One of ordinary skill in the art does not need to add the teachings of a third reference to accomplish a result that is allegedly already taught by the combination of the first two references. The Examiner thus provides no rational underpinning for why one of ordinary skill in the art would choose to modify the method of Faller to include the specific content of Baumgarte and Broadie." (Remarks, Pages 38-39) The Examiner disagrees. Baumgarte (¶ 0027) fully acknowledges stereo audio decoder 114 as standard. Therefore, providing the dematrixing to replace the

conventional decoder 114 would have been obvious to someone of ordinary skill in the art at the time the invention was made because both were well known at the time of invention and would have provided the predictable result of a stereo audio signal. Further see MPEP 2141, Examination Guidelines, section C (III), Rationales to Support Rejections under 35 USC 103. (KSR International Co. v. Teleflex Inc. (KSR), 550 U.S. ___, 82 USPQ2d 1385 (2007)

14. Applicant further argues "The Examiner provides no further explanation of why one of ordinary skill in the art would make the suggested modifications to achieve the combination asserted against the claims of the present invention. The only teaching for modifying Faller to include deriving said N audio signals from said M encoded audio channels by a process that includes dematrixing said M encoded channels, as required by claims 68 and 69, exists in the present application, which the Examiner cannot use as a roadmap to string multiple references together to find all of the claim limitations of the present invention without relying on impermissible hindsight. Because there is thus no rational underpinning to combine Baumgarte and Broadie with Faller as suggested by the Examiner, the combination of Faller in view of Baumgarte in view of Broadie lacks rational underpinning, and the rejection should be reversed." (Remarks, Page 39, ¶ 2) The Examiner disagrees. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made,

and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See In re McLaughlin, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

15. Applicant further argues "The Examiner thus fails to provide any articulated reasoning with a rational underpinning to support the legal conclusion of obviousness. See KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 418 (2007) (requiring an explicit analysis when a conclusion of obviousness is based on interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, and the background knowledge possessed by a person having ordinary skill in the art). It is not enough merely to show that the proposed modification is allegedly known in the art. The obviousness analysis is not complete until an explanation is provided as to why one having ordinary skill in the art would have been led to apply the alleged teachings of Baumgarte and Broadie to the system and method of Faller. The Examiner has failed to provide such an explanation, and thus has failed to meet the Examiner's burden to establish a prima facie case over Faller in view of Baumgarte in view of Broadie with respect to claims 68-69 and 73. In re Oetiker, 977 F.2d 1443, 1445 (Fed. Cir. 1992) (In rejecting claims under 35 U.S.C. § 103(a), the examiner bears the initial burden of establishing a prima facie case of obviousness. Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the appellant.); see also MPEP § 2142." (Remarks, Pages 39-40) The Examiner disagrees. As was described above in section 13, Baumgarte (¶ 0027) fully acknowledges stereo audio decoder 114 as standard. Therefore, providing the

dematrixing to replace the conventional decoder 114 would have been obvious to someone of ordinary skill in the art at the time the invention was made because both were well known at the time of invention and would have provided the predictable result of a stereo audio signal. Further see MPEP 2141, Examination Guidelines, section C (III), Rationales to Support Rejections under 35 USC 103. (KSR International Co. v. Teleflex Inc. (KSR), 550 U.S. ___, 82 USPQ2d 1385 (2007).

16. The remainder of the arguments on pages 40-41, ¶ 1, stem from the same arguments as presented above. Refer back to sections 13-14 appropriately.

17. Applicant further argues “The quoted passage of Faller provides no support to the Examiner's conclusion. Not only does the Examiner concede that Faller does not teach that said multichannel output signal is in the frequency domain, it in fact teaches that the multichannel output is the result of converting spectra back to the time domain. Faller, page 523, column 1. Faller specifically teaches that "[t]he sum signal to a spectral representation (time- frequency transform TF). Then as a function of the ICLDs, ICTDs, and ICCs the spectral coefficient is shown. These modified spectra are converted back to the time domain with the inverse transform (TF-~)."Faller, Figure 5 and page 523, column 1. Faller thus teaches no more than converting a sum signal to a spectral representation to scale the spectral coefficients before converting the modified spectra back to the time domain. It is only after the spectra are converted back to the time-domain that the process results in the multichannel output, which therefore is in the time domain. Thus, Faller neither teaches nor suggests that said multichannel output signal is in the frequency domain, as required by claim 72.” (Remarks, Pages 42-43)

The Examiner disagrees. Faller, Fig. 5 clearly shows an inverse transform TF^{-1} prior to speaker output. Reading the subsection below the Figure, it is clearly stated that the spectral coefficients are modified by scaling as a function of the ICLD's, ICTD's, and ICC's (emphasis provided). Furthermore, the diagram in Fig. 5 shows that the scaling is provided for each channel (multichannel output) prior to the inverse transform. The difference between the claimed limitation and what is disclosed in Fig. 5 is the inverse transform which puts the multichannel output back into the time domain. As was contended at the writing of the most recent Office action, spectral transformations (inverse transformations) were well known at the time the invention was made. Applicant further argues 3 points on Page 43. In regards to item 2, it was of the opinion of the Examiner that the removal of the most expensive operation (Faller, Page 526, column 2, section V) to keep the coefficients in the frequency domain would have been obvious to someone of ordinary skill in the art at the time the invention was made because it requires no inventive ingenuity. It's simply a removal of one of the operations and would immediately result in reduced computational complexity. Item 3 addresses specific factual findings predicated on sound technical and scientific reasoning to support the conclusion of common knowledge. The Examiner maintains that the removal of the inverse transform would have been obvious to someone of ordinary skill in the art at the time the invention was made. Furthermore, someone of ordinary skill in the art would recognize that a reduction in computational complexity (factual finding) would clearly warrant such a consideration. Lastly, upon further consideration by the Examiner, Faller provides both a multichannel output signal in the time domain and the

frequency domain. It first outputs the multichannel output in the frequency domain, then converts it to the time domain under the broadest reasonable interpretation.

18. Applicant further argues 72 on Pages 44-45, section B. Refer to the above response (17) for a factual finding (Faller, section V) for evidence as to why someone of ordinary skill in the art at the time the invention was made would be motivated to eliminate the inverse transform.

19. Applicant further argues the Official notice rejection on Page 46, ¶ 1 -¶ 2. The Examiner disagrees for the same reasons as set forth above in response 17.

20. Applicant further argues “In summary, the Examiner's proposed justification for combining Failer and MPEP 2144.03 constitutes impermissible hindsight reconstruction, and cannot support a prima facie showing of obviousness. See MPEP § 2142 ("The tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.") (citing references). For at least these additional independent reasons, the rejection of claim 72 should be reversed.” (Remarks, Pages 46-47) The Examiner disagrees. At the onset, the Examiner notes that Applicant has not argued why it would not have been obvious to eliminate the inverse transform for the reason described in the office action. Therefore the argument is tantamount to a general allegation of patentability. As long as the combination takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's

disclosure, such a reconstruction is proper. See In re McLaughlin, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Furthermore, the Examiner maintains that someone of ordinary skill in the art at the time of invention would have been motivated to remove the inverse transform in the base decoder to reduce complexity and reserve the inverse transform to a point later in the process after further processing, possibly including further upmixing or post-processing.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

CONCLUSION

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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